

of land was seen at all. On March 17 the *Challenger* anchored near Melbourne, all well.

A TRAIN arrived at Algiers from Oran on the 18th inst., six hours behind time, having been delayed by a thick layer of grass-hoppers which covered the rails.

THE first meeting of the Board of Governors of the Yorkshire College of Science was held in the Philosophical Hall, Leeds, on April 30. Dr. Heaton was called upon to preside. The business of the meeting was the election of the president, treasurer, council, and auditor for the ensuing year, also the appointment of six endowed grammar schools and ten institutions, each of whose governing bodies should elect a Governor of the College. Lord F. C. Cavendish, M.P. and Mr. W. B. Denison were respectively elected president and treasurer of the College. The following grammar schools were placed in Schedule A:—Leeds, Bradford, Batley, Halifax, Wakefield, and Giggleswick. The institutions placed in Schedule B were the Philosophical Societies at York, Leeds, Bradford, Halifax, Sheffield, and Huddersfield, the Clothworkers' Company of the City of London, the West Riding Coalmasters' Association, the Cutlers' Company, Sheffield, and the Trustees of Ackroyd Charity. Each of these bodies is invited to nominate a member of the Board of Governors.

THE *Times of India* states that Dr. David Wilkie has been appointed by the Government of India to conduct a scientific investigation into the nature, pathology, and causation of the fever prevailing in the Burdwan and Hoogly districts. He is to work in communication with Dr. Lewis and Dr. Cunningham, and under the direction and general superintendence of the Sanitary Commissioner with the Government of Bengal.

UNDER the direction of Mr. Liversidge, Professor of Geology and Lecturer in Practical Chemistry, the Laboratory of the Sydney University is being improved in a way to make it similar to the Laboratory of the Royal School of Mines and the University of Cambridge, and to afford appliances for the proper conduct of the exercises in practical chemistry.

MR. WILLIAM H. DALL resumed his Alaskan explorations under the U. S. Coast Survey, about April 20, at which date he expected to sail for Sitka and more northern points. It is probable that his labours during the present season will be in the neighbourhood of Cook's Inlet and the peninsula of Alaska, and the coast of the mainland as far as the islands of Nunivah and St. Michael's. His duties are to complete a coast pilot of the territory, and to make careful magnetical and other observations. Should his regular work permit, he hopes to make large collections in natural history and ethnology, in continuation of those of previous seasons, and transmitted through the Coast Survey Office to the National Museum at Washington, and which have done him and the Survey so much credit.

HEFT V. of Petermann's *Mittheilungen*, contains Contributions to the climatology and meteorology of the East Polar Sea, by Prof. Mohn; an account of some of the results of Gerhard Rohlfs' expedition into the Lybian desert, with a map; and a German translation of the journal kept by Jacob Wainwright, while marching with Livingstone's body from Central Africa to Zanzibar. A copy of this journal was obtained by the late Richard Brenner, the African traveller and Austrian Consul at Zanzibar.

THE additions to the Zoological Society's Gardens during the last week include a Crested Curassow (*Crax alector*) from Guiana, presented by Mr. G. Bruce; a Ring-necked Parakeet (*Palaeornis torquata*) from India, presented by Mrs. A. de Normanville; a Coati (*Nasua nasica*) from South America, presented by Miss E. Waller; a Common Paradoxure (*Paradoxurus typus*) from India, presented by Mr. G. R. Colbeck; two Muscovy Ducks (*Cairina moschata*) from Monte Video, presented by Mr. S. J. Oliff; a Koodoo (*Strepsiceros kudu*) from Africa, deposited.

THE METEOROLOGICAL CONGRESS AT VIENNA *

II.

WITH reference to the organisation of a system of meteorological observations on the Chinese coasts, for advice regarding which the Congress was applied to, a report was adopted setting forth the general principles of organisation suited to the circumstances of China.

In addition to the above, General Myer, as commissioned by the War Department of the United States, proposed that with a view to their exchange at least one uniform observation of such character as to be suitable for the preparation of synoptic charts be taken and recorded daily and simultaneously at as many stations as practicable throughout the world. This proposal the conference adopted, and, as the readers of NATURE are aware, is now in operation.

On these various subjects much valuable information will be found in the discussions in the Reports of the Committees, and in the communications printed in the Appendices, particularly on the subjects of weather telegraphy, sheet lightning, atmospheric electricity, ozone, clouds, atmometers, rain-gauges, and the protection of thermometers.

In the review of the Leipzig Conference (NATURE, vol. viii. p. 342) a hope was expressed with reference to the protection of the thermometers, which is really the vital question of meteorology, that the Vienna Congress would face it, seriously discuss it, and either arrive at some decision, or at least suggest some steps to be taken that might ultimately lead to the uniformity which is so imperatively called for. Unfortunately this has not been done. We say unfortunately, for scarcely two of the head observatories in the British Isles and on the Continent, where continuous or hourly observations are recorded, could be named at which there is uniformity in the protection of the thermometers as respects the box in which they are placed, height above the ground, and position with reference to walls and other surrounding objects. Now till uniformity in the position and exposure of the thermometers be obtained, there can be no comparableness in the results, and consequently the observations are of little value as data for the determination of what must be regarded as the most important fundamental facts on which the science rests, viz. the diurnal and seasonal march of the temperature and humidity of the atmosphere. It is only from the range of the temperature and the humidity of the atmosphere of different regions as ascertained by observations made on a uniform method that we are furnished with physical data for the scientific treatment of such questions as the daily fluctuations of the barometer, and the changes and movements of the atmosphere generally.

Prof. Wild's paper on the exposure of thermometers (p. 77) we recommend to the careful consideration of meteorologists. His observations, instituted at the Pulkowa Observatory at heights of 6½ ft., 52 ft., and 86 ft., are, as far as we are aware, the best that have yet been made for the purpose of disclosing the influence which mere height, as such, has on the temperature. The thermometers were placed on a scaffolding constructed of timber lightly put together, and standing in an open field, being in these essential points in striking contrast with those placed for a similar object on the Chinese pagoda in the Royal Gardens at Kew, it being evident that observations made with thermometers placed like those at Kew will give results which possess little, if any, value in an inquiry touching the vital question of the position and exposure of thermometers.

From the small differences among the mean temperatures he obtained at the different heights, Wild concludes that the height of thermometers above the ground need not necessarily be the same, but may vary between 6 ft. and 33 ft. The differences he obtained as regards mean temperature, though by no means insignificant, are doubtless small; but when we regard the maxima and minima and the observations at particular hours, which in their practical bearings are so important, the influence of height becomes well marked. Hence, if in any meteorological system uniformity as respects height be disregarded, the results so obtained fail to supply the data necessary for a satisfactory comparison of climates. This condition is all the more indispensable when the thermometers are placed at a height of 4 ft. above the ground, at which they should be placed as being the height which gives the best results as regards the application of meteorology to human mortality and other important questions affecting animal and vegetable life.

* Continued from p. 18.

We are probably yet a long way from any simple method, suited for general adoption, for observing the *true temperature of the air* at any place by means of the thermometer, so as to eliminate completely the disturbing influence of radiation as regards the thermometer and its protecting screen, or box. This is a problem which may well engage the serious attention of the chief observatories of this and other countries for some years to come. The inquiry may be conducted by ascertaining the true temperature of the air at different hours and seasons by Joule's method, described in a communication to the Philosophical Society of Manchester, November 26, 1867, and comparing the results with those simultaneously obtained by thermometers protected in boxes of different constructions and materials. On this point Wild's paper contains some very valuable observations—valuable, not because they are conclusive, but because they are suggestive, as indicating the line of inquiry which should be pursued. In the meantime all that can be secured is *uniformity*, which would be sooner attained if meteorologists recognised that the following positions of the thermometer are, on physical grounds, inadmissible in researches into the hourly fluctuations of the temperature and humidity of the air, viz. the roofs of houses, close or near to walls, over bare soil, in the shadows of trees, walls, or other obstructions, or outside windows. Let it be recognised that observations made under these conditions are of less, and in most cases of no value, then the adoption of 4 ft. as the standard height would follow, and with it the question of uniformity would be almost, if not altogether, settled.

As regards *rain-gauges*, the Congress adopted as the best form for the receiver of the rain-gauge the circular one, with a diameter of 14 in., and at a height of 3 ft., or better 4½ ft., above the ground, a decision which was agreed to by all the delegates except Mr. Buchan, who lodged his protest against it. We have taken the trouble of looking over Mr. Symons' last published *British Rainfall*, and observe that there are not more than half a dozen gauges in the British Isles of this dimension. The readers of NATURE are no doubt aware of the extensive experiments and observations made on this subject in England for some years past, and published annually in the *British Rainfall*, from which it has been experimentally proved that gauges of all sizes from 3 in. to 24 in. inclusive collect amounts not differing more than 2 per cent. from each other. We have had a communication from Mr. Scott, by which we are glad to learn that the Meteorological Office has resolved to retain at its stations the 8 in. gauges hitherto in use. This decision as to the size of the gauge a future Congress will no doubt rescind. Equally in error is the decision as regards height of gauge above the ground, especially large gauges. It is certain from numerous observations made on the subject, that gauges placed at from 3 ft. to 4½ ft. above the ground will not indicate with sufficient correctness the amount of the rain which falls at the place of observation in cases where wind accompanies the rain, owing to the disturbance caused by the obstruction offered by the gauge itself, and by the eddies generated within the funnel. Now owing to the enormous dragging influence of the earth's surface of the wind, these disturbing effects are reduced several fold at the surface and at one foot above it as compared with 3 to 4½ ft. high. On these grounds we cannot recommend British Meteorologists to follow the decision of the Congress. Owing to the extreme variableness of the rainfall, particularly in such countries as Great Britain, where the surface is so uneven, the proper observation of the rainfall requires twenty times more observers than are required to observe any of the other meteorological elements. It is therefore well that a cheap gauge is also a good one, since it facilitates an adequate observation, through numerous observers, of the rainfall, which from its practical and scientific bearings it is so important to know.

In fixing the hours of observation it is essential that those hours be selected which give approximately the mean temperature of the day. The combination of hours which seems to have been most approved both at the Leipzig Conference and the Vienna Congress, and referred to by some very able meteorologists as unconditionally the best, is 6 A.M., 2 P.M. and 10 P.M. The merits of this combination consist in the equal interval of eight hours between the observations, in the close approximation to the daily mean temperature it affords, and in its suitability for tri-daily charting of the weather. It is, however, a combination of hours which, since it all but absolutely excludes the hours of occurrence of the daily thermometric, barometric, and hygrometric extremes and means, cannot be recommended as generally suitable for meteorological observations of all countries.

Indeed, its adoption in tropical and sub-tropical countries would be a blunder. As generally suitable for all latitudes, and for the observation of the principal daily atmospheric phases of temperature, pressure, &c., the best hours are 9 A.M. 3 P.M. 9 P.M., or 10 A.M. 4 P.M. 10 P.M., it being assumed that self-registering thermometers are also used.

We are glad to see that it has been proposed to convene another Meteorological Congress in three years, and hope that some of the questions that form the life-blood of the science will be seriously and adequately discussed by the members of that Congress. The more important of these questions are:—(1) The position and protection of the thermometer for the temperature of the air; (2) A more satisfactory method for observing the humidity of the air, and of making the deductions therefrom; (3) The observation of earth-temperatures, especially at and near the surface, and the depth at which fixed thermometers cease to be suitable; (4) Solar and terrestrial radiation; (5) The examination of the drying qualities of the air by anemometers, so as to secure comparable results; (6) A statement of the conditions which anemometrical stations ought to fulfil, so that the instrument shall indicate the true movement of the air over the region where it is placed, or, if this be unattainable, a means of valuing the observations so as to approximate to it; (7) Anemometers (Wild's, &c.) for stations of the second order, with which trustworthy observations of wind-force may be made; and anemometers of velocity which admit of their errors being readily ascertained from time to time; (8) An adequate nomenclature of clouds; and (9) the question of atmospheric electricity.

Though the Vienna Congress can properly be regarded as having only concerned itself with questions lying on the outskirts of meteorology, it has done commendable work in thus paving the way for future Congresses, entering on the really important practical questions which united action on the part of meteorologists can alone settle. Until tolerable uniformity be arrived at as regards (1), (2), (5), (6), (7), and (8), in the above paragraph, meteorologists can scarcely be said to have begun to collect data of such a nature as will satisfy our best physicists, and thus lead them to undertake the investigation of the more important of the intricate and difficult problems of the science.

M. COGGIA'S COMET

THE following is an ephemeris to the comet discovered by M. Coggia. It will be seen that the comet will be vastly increased in brilliancy by the month of August.

Berlin Mean time.	R.A.	D.	Brightness (brightness at time of discovery = 1).
	h. m.		
May 19.5	6 30.9	+ 68	49.4
28.5	34.34		53.7
27.5	39.49		59.8
31.5	45.55	+ 69	8.4
June 4.5	52.57		19.2
8.5	7 0.57		31.6
12.5	10.0		45.1
16.5	20.17		58.1
20.5	31.57	+ 70	9.3
24.5	45.8		16.3
28.5	59.59		15.2
July 2.5	8 16.36		0.7
10.5	56.47	+ 68	15.0
18.5	9 35.50	+ 62	45.2
26.5	10 8.57	+ 47	10.9
Aug. 3.5	21.30	+ 8	52.7
11.5	10.55	+ 28	17.2
			130.8

SOCIETIES AND ACADEMIES

LONDON

Royal Society, May 7.—Note on some Winter Thermometric Observations in the Alps, by E. Frankland, F.R.S.

During the past winter the author spent a fortnight at the village of Davos, Canton Gränbünden, Switzerland, and had thus an opportunity of experiencing some of the remarkable peculiarities of the climate of the elevated valley (the Prättigau) in which Davos is situated. The village has of late acquired considerable repute as a climatic sanitarium for persons suffering from diseases of the chest.

* NATURE, vol. viii. p. 342.